

# **The International Science and Politics of Depleted Uranium**



Colonel Mark A. Melanson, Ph.D., CHP

Director

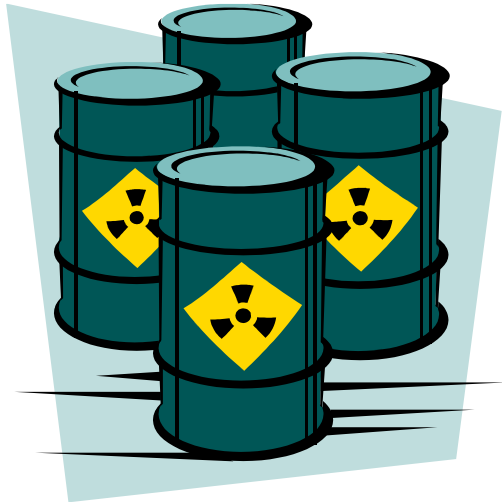
Armed Forces Radiobiology Research Institute

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# Objectives

- **Trace the ongoing history of the international debate on the safety and acceptability of the military uses of depleted uranium**
- **Review the various conclusions by international scientific bodies such as the World Health Organizations, the International Atomic Energy Agency, and the United Nations Environment Programme**
- **Present the lines of argument presented by various activist and political organizations that oppose the military use of depleted uranium, along with their strengths and weaknesses**

D.U.



OR



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# A Nearly Two Decade Long Struggle



# How I got Involved: A Sobering Story

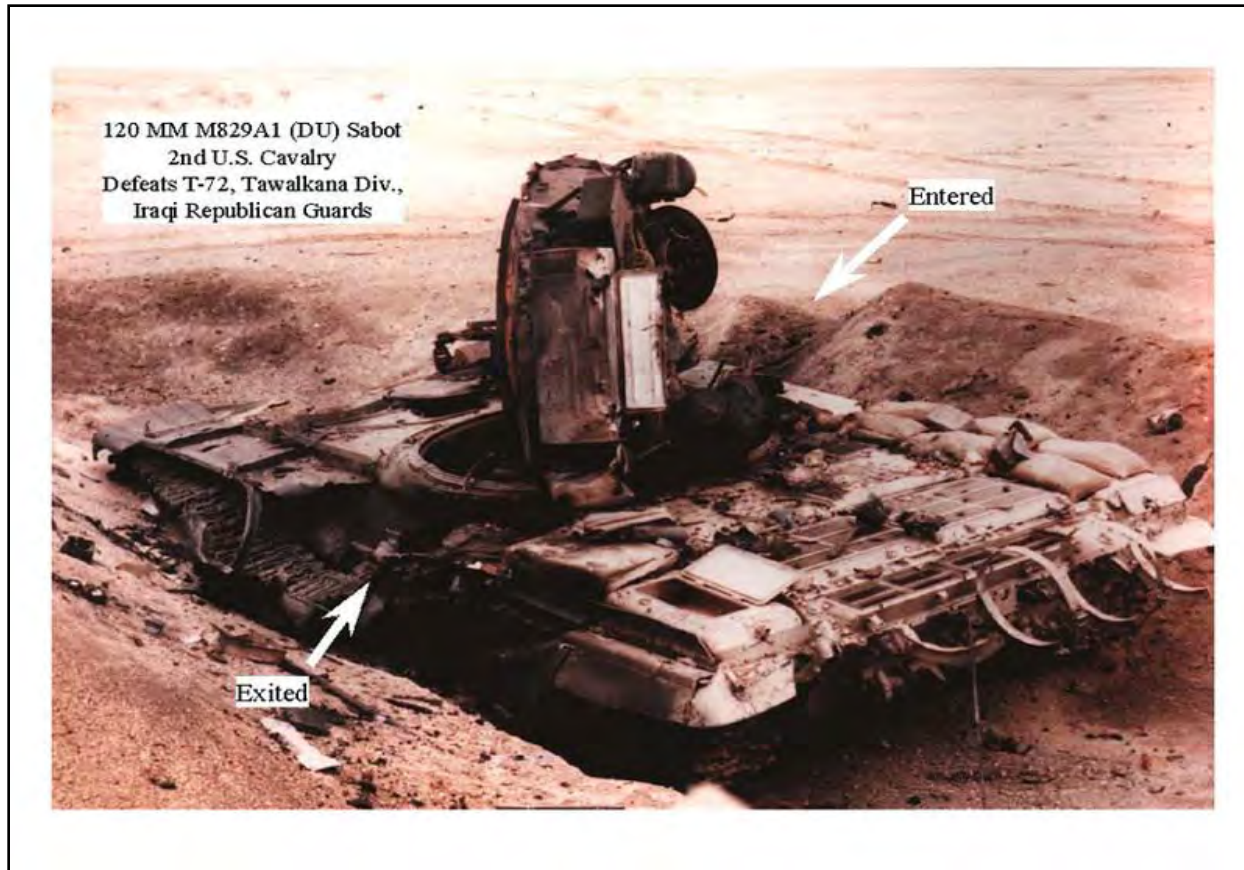


# Talk Outline

- Military Uses of Depleted Uranium (DU) (Primer and Chronology)
- International Science of DU
- International Politics of DU

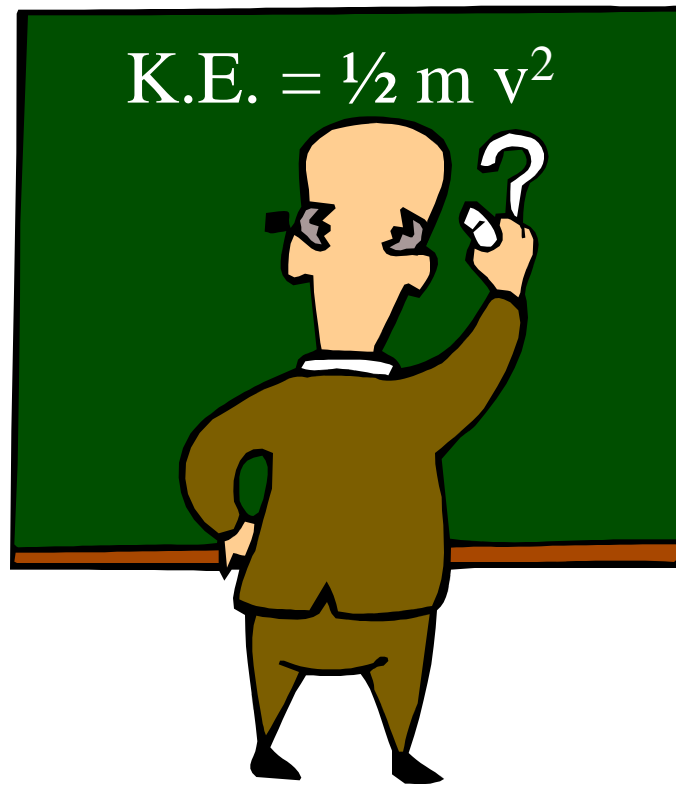


# The Military Uses of Depleted Uranium





# Military Depleted Uranium Primer



# Depleted Uranium Properties

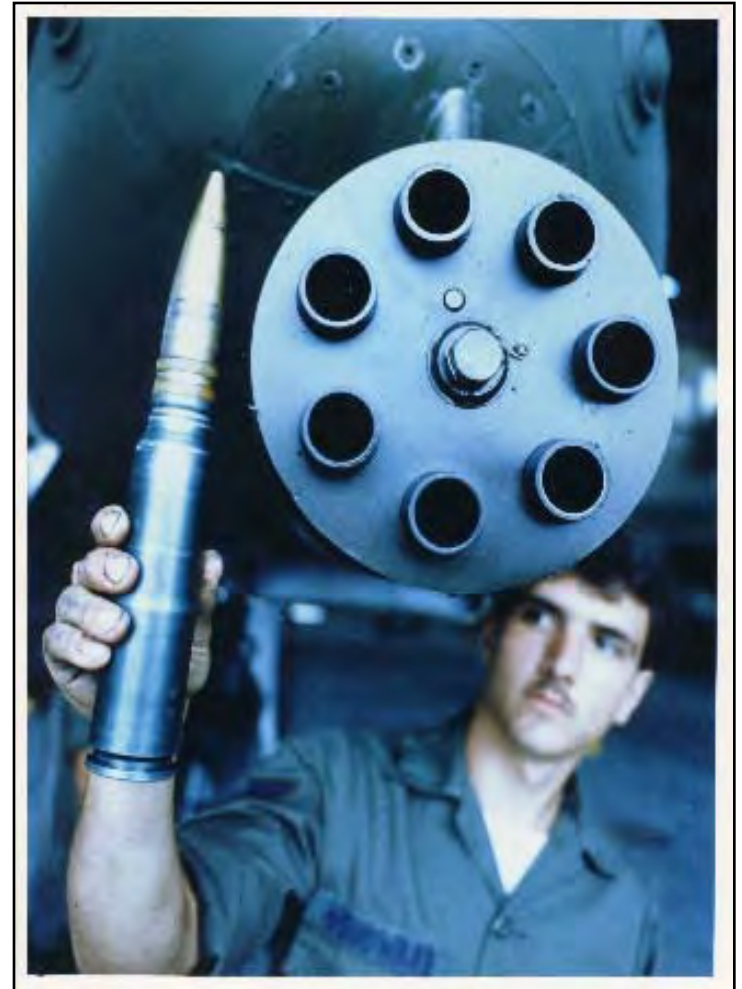
- Radioactive heavy metal
- 40 % less radioactive than natural uranium
- Self-sharpening (adiabatic shearing)
- Density: 70% more dense than lead (Pb)
- Pyrophoric
- Trace impurities: fission products, transuranics (TRUs) and U-236

# The First Military Use of DU

- Davy Crockett Tactical Nuclear Weapon
- Developed during the 1950s, fielded in the 1960s
- Depleted Uranium used as a spotting round
- Army units trained with it worldwide



# Depleted Uranium on Offense

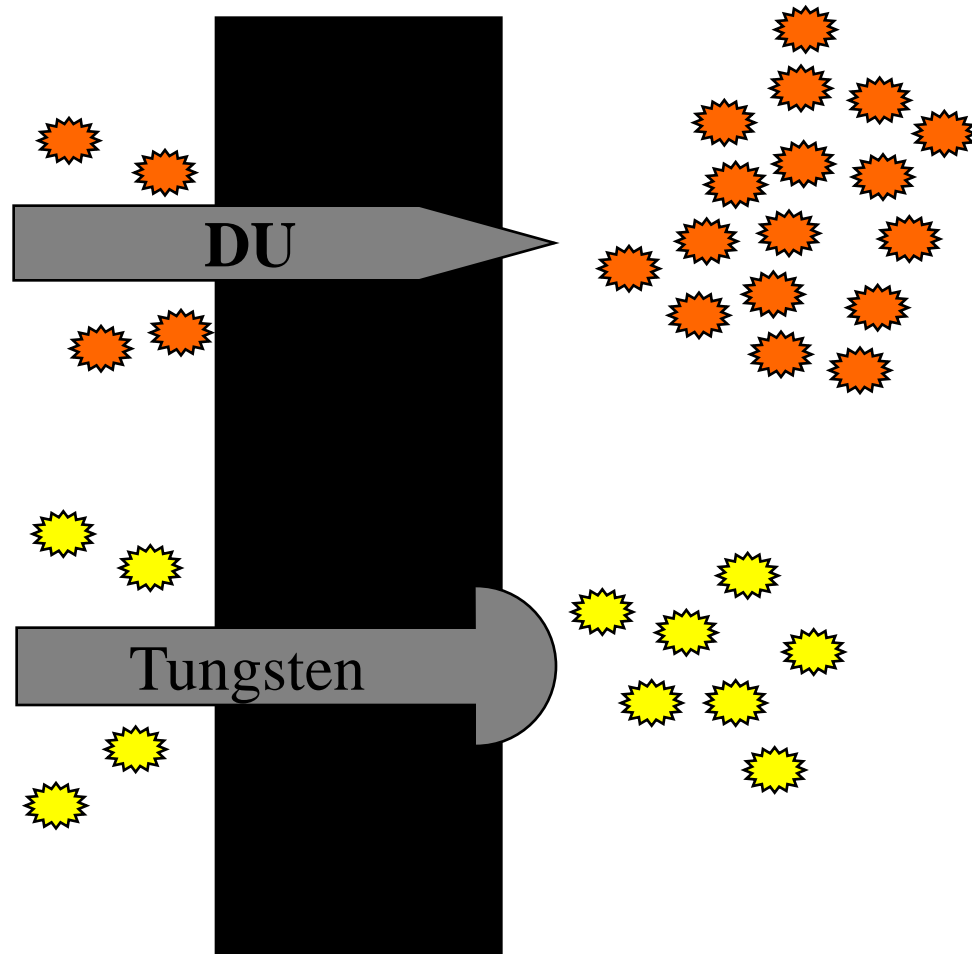


# DU Metallurgic Properties

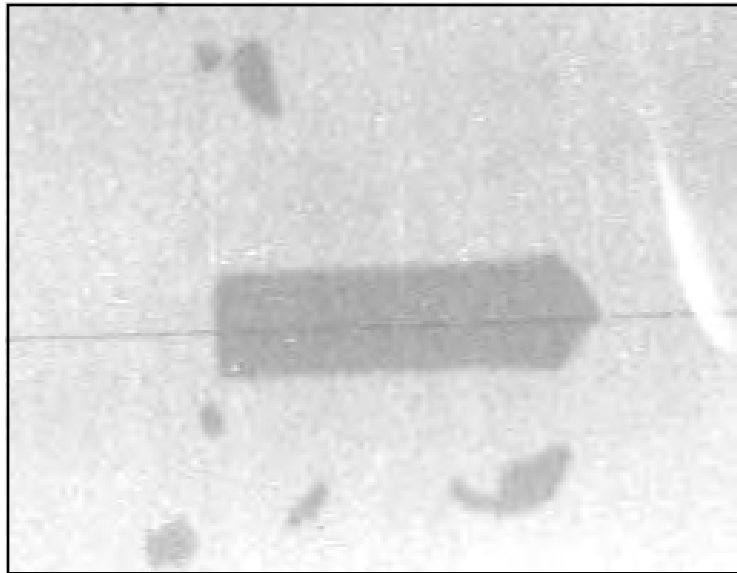
Outside

Armor

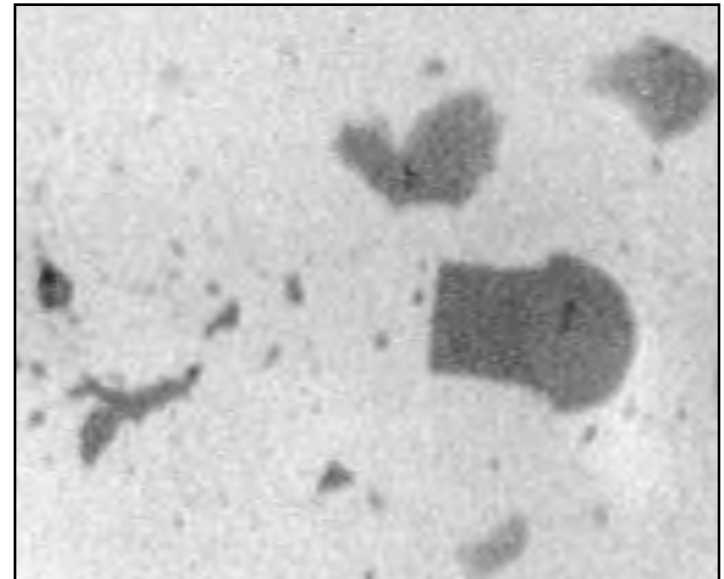
Inside



# Behind-Armor X-ray Images of DU and Tungsten Penetrators

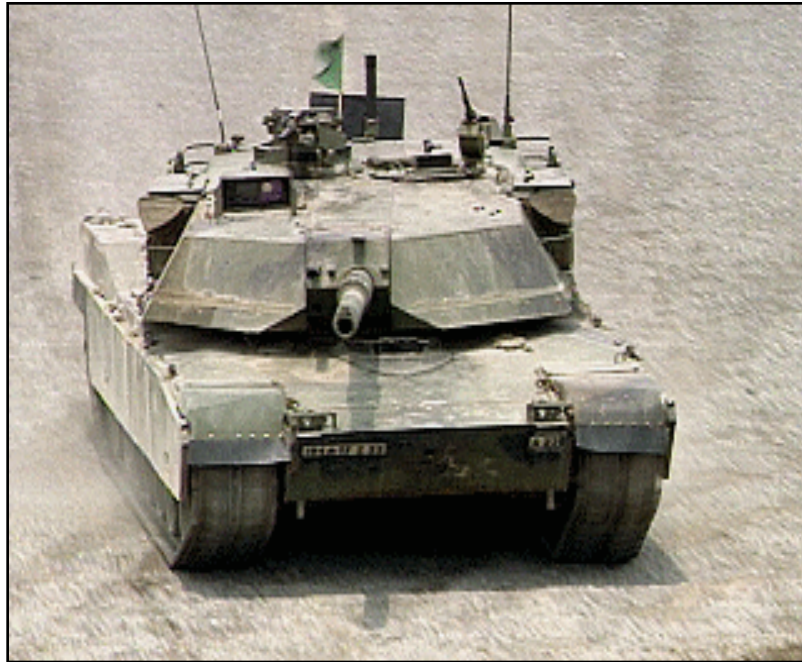


DU



Tungsten

# Depleted Uranium on Defense



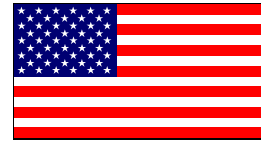
# Chronology of the Combat Use of Depleted Uranium





# Operation Desert Storm

- Iraqi invasion of Kuwait on August 2<sup>nd</sup>, 1990
- Liberation of Kuwait in 1991
- Large and small caliber DU munitions



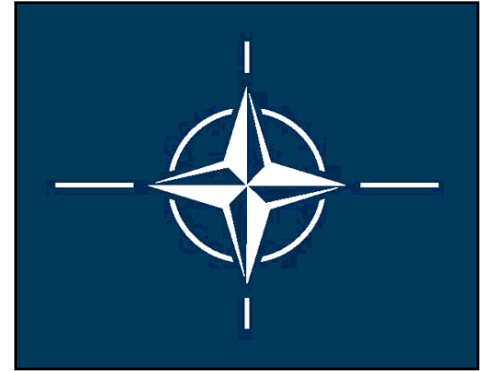
# Operation Deliberate Force

- 1995 - 1996
- Ethnic Cleansing by Bosnian Serb forces
- NATO Airstrikes
- Small caliber DU munitions



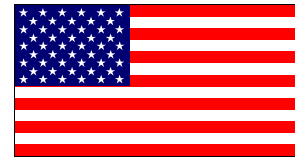
# Operation Allied Force

- 1999
- Ethnic Cleansing of Kosovar Albanians by Serb forces
- NATO Airstrikes in Kosovo, Serbia, and Montenegro



# Operation Iraqi Freedom

- 2003
- Invasion of Iraq
- Large and small caliber DU munitions used in early phases of the war

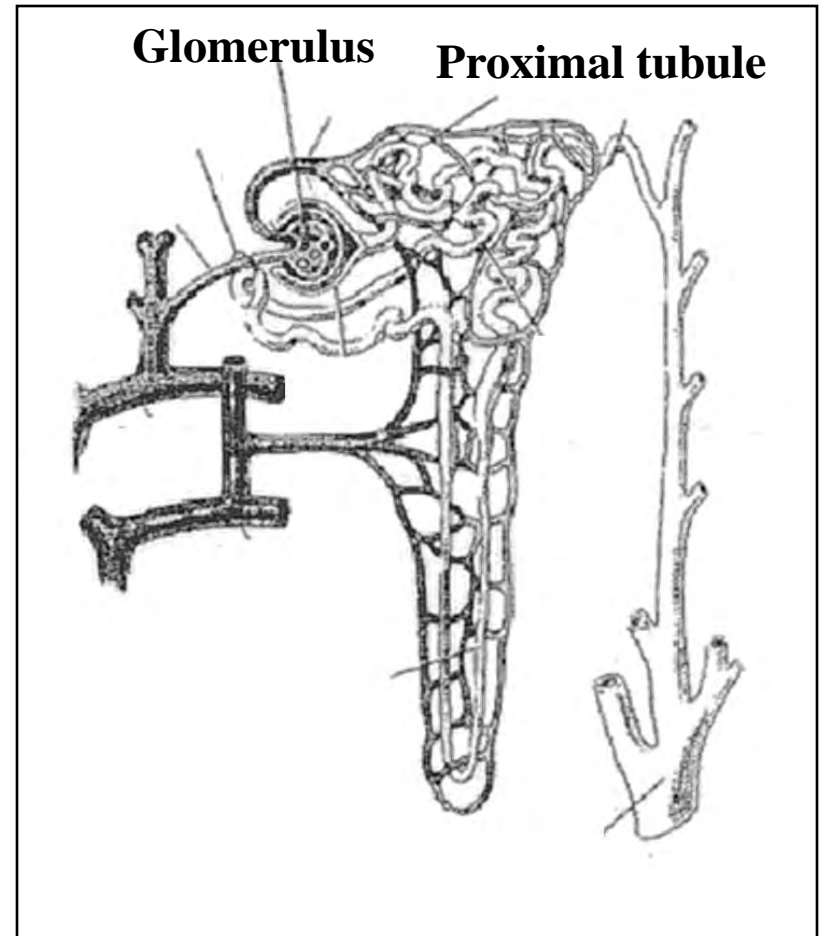


# The Science of Depleted Uranium



# DU Health Effects

- DU is a radioactive heavy metal
- Health concerns about DU predominately relate to its chemical properties as a heavy metal rather than to its low radioactivity
- The kidney is the target organ for chemical toxicity (soluble forms)
- The lung is the target organ for radiological concerns (insoluble forms)



# Depleted Uranium Radiation Risks

- Radiogenic risk with no assumed threshold
- Risk linearly proportional to the radiation dose



# The National Science

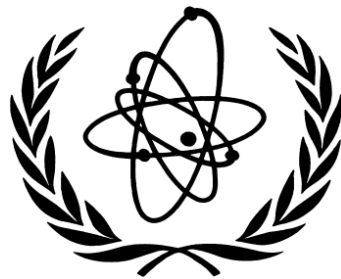


**ATSDR**

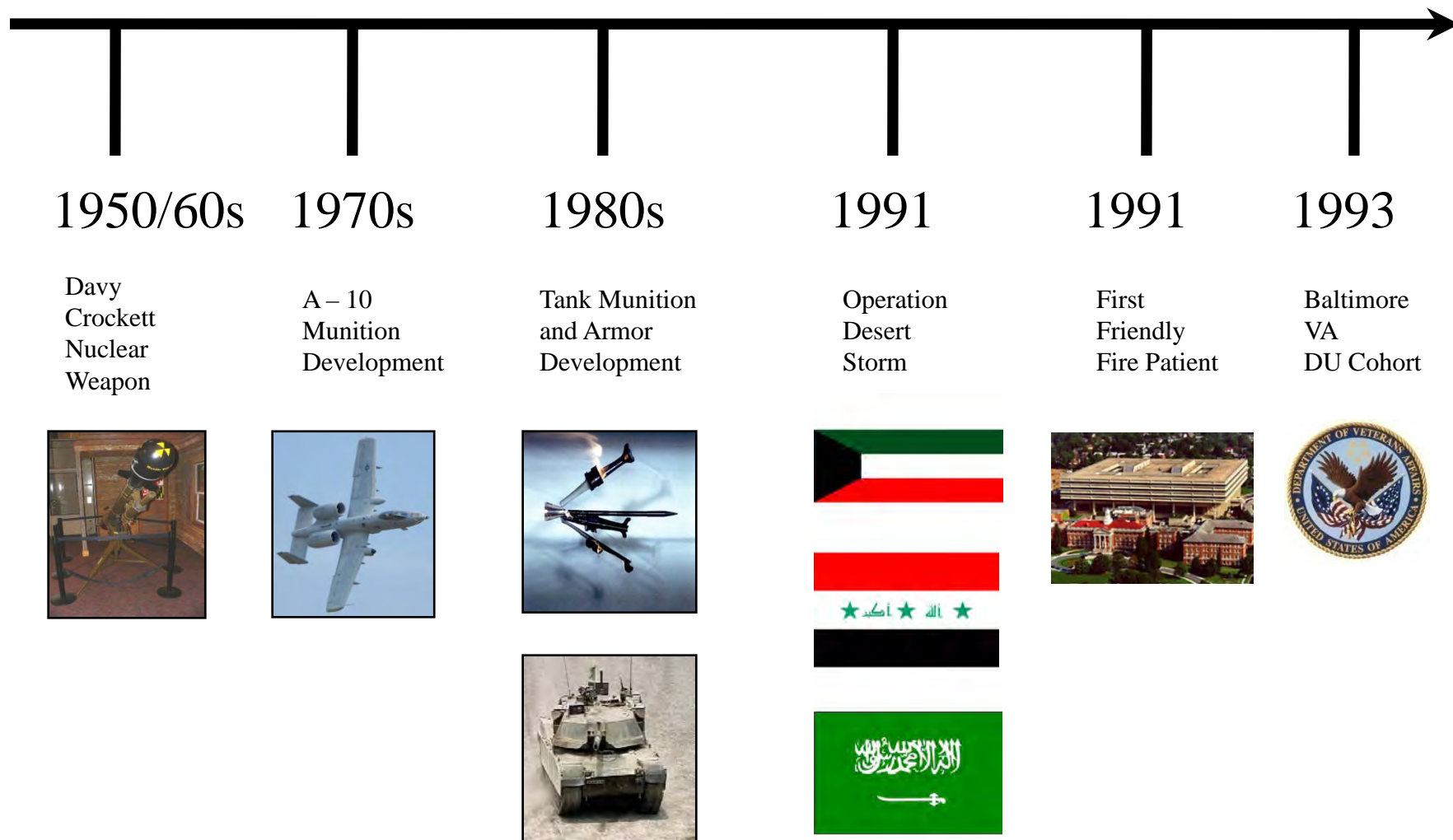




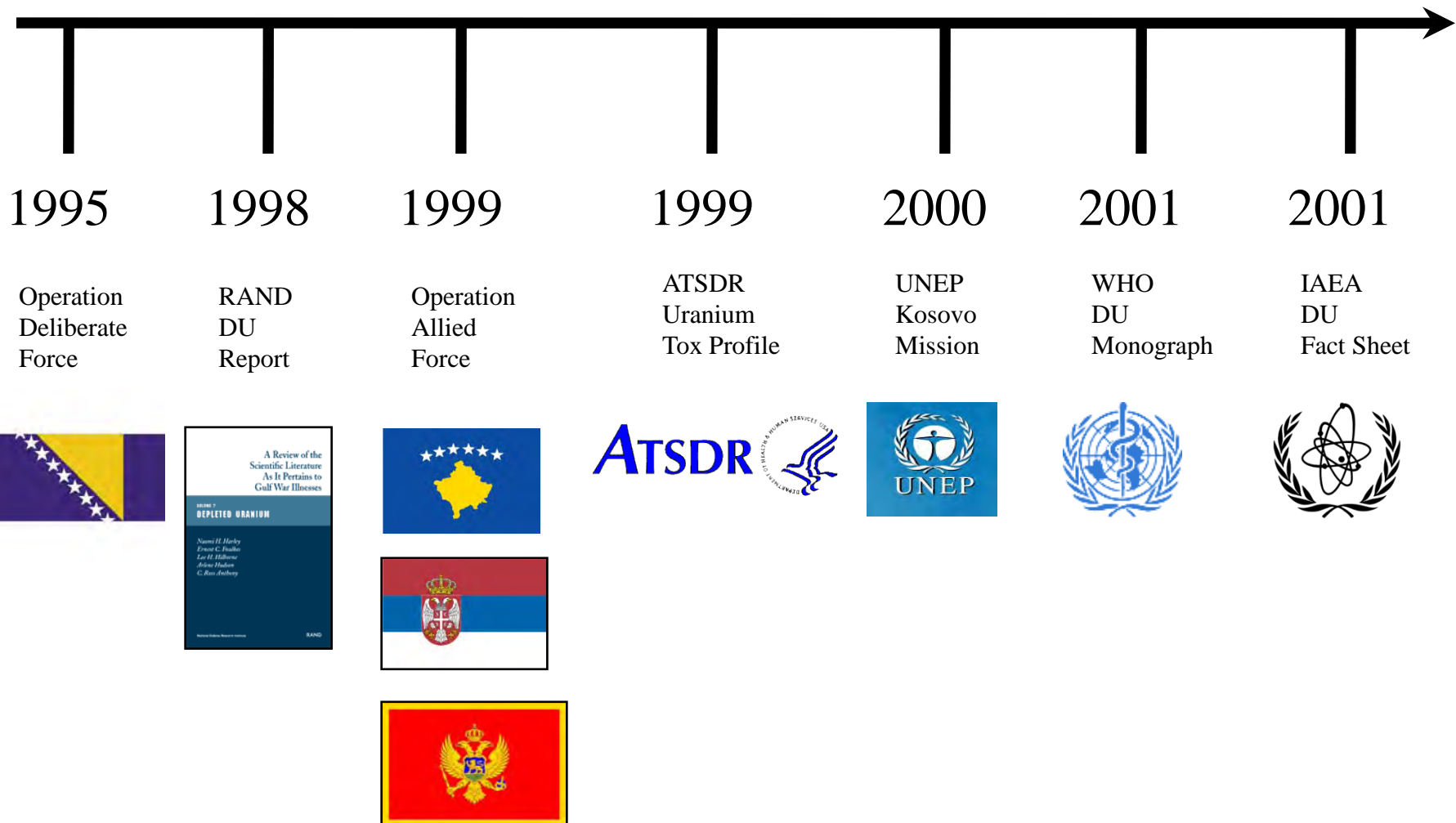
# The International Science



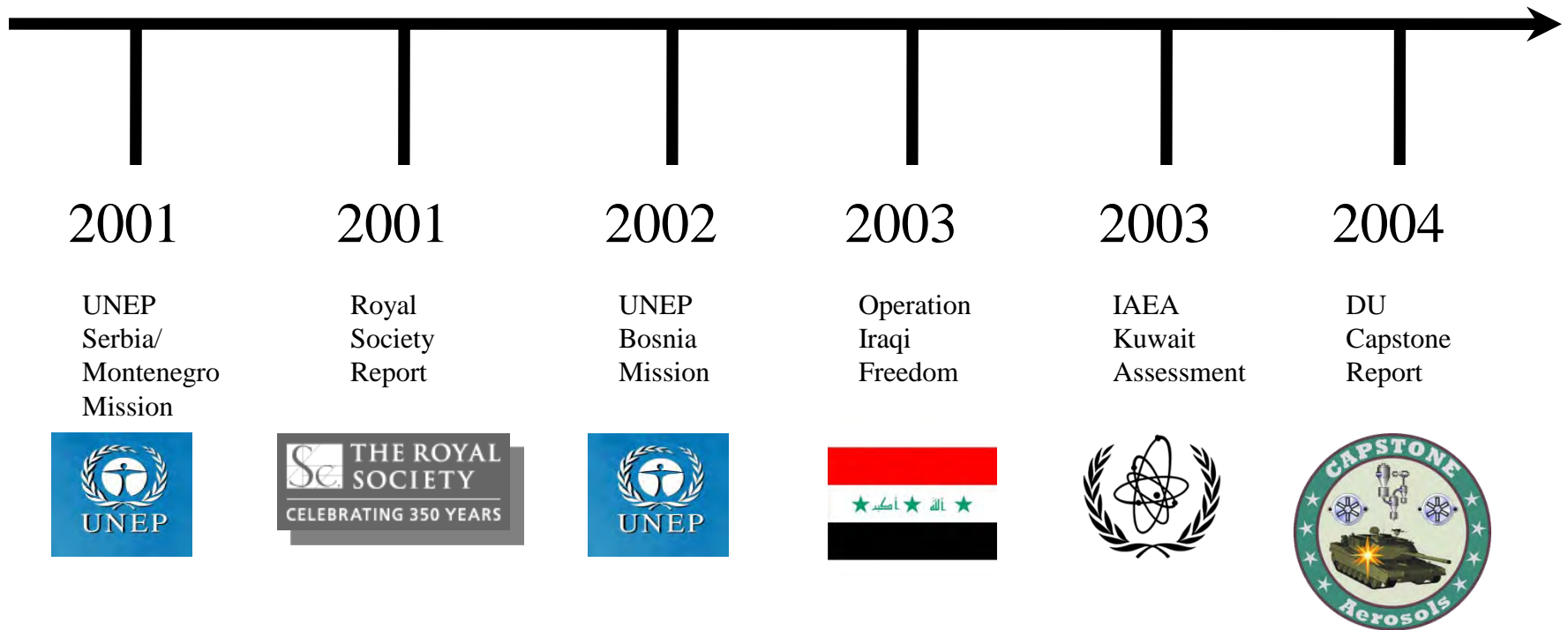
# Depleted Uranium Timeline



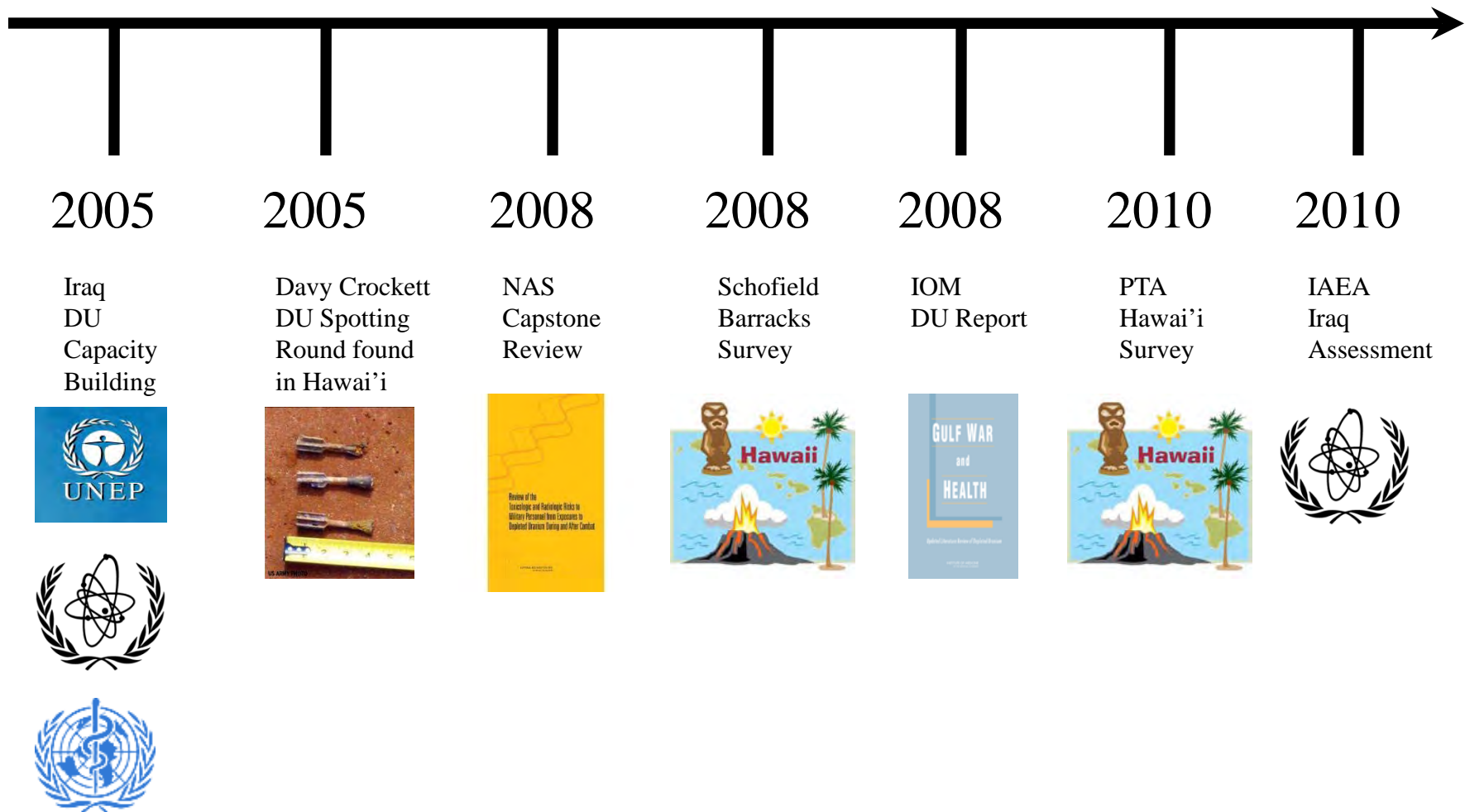
# Depleted Uranium Timeline



# Depleted Uranium Timeline



# Depleted Uranium Timeline



# Environmental Assessments



# Summary of Environmental Assessments

Location	Year	Organization	Dose	Conclusions
Kosovo	2001	UNEP	< 100 mrem	The corresponding radiological and chemical risks from all points of view are consequently insignificant
Serbia & Montenegro	2002	UNEP	< 100 mrem	The corresponding radiological and chemical risks are insignificant
Bosnia & Herzegovina	2003	UNEP	< 100 mrem	The amount of DU at the contamination points was too low to cause any radiological or chemical problems, either now or in the future

# Summary of Environmental Assessments

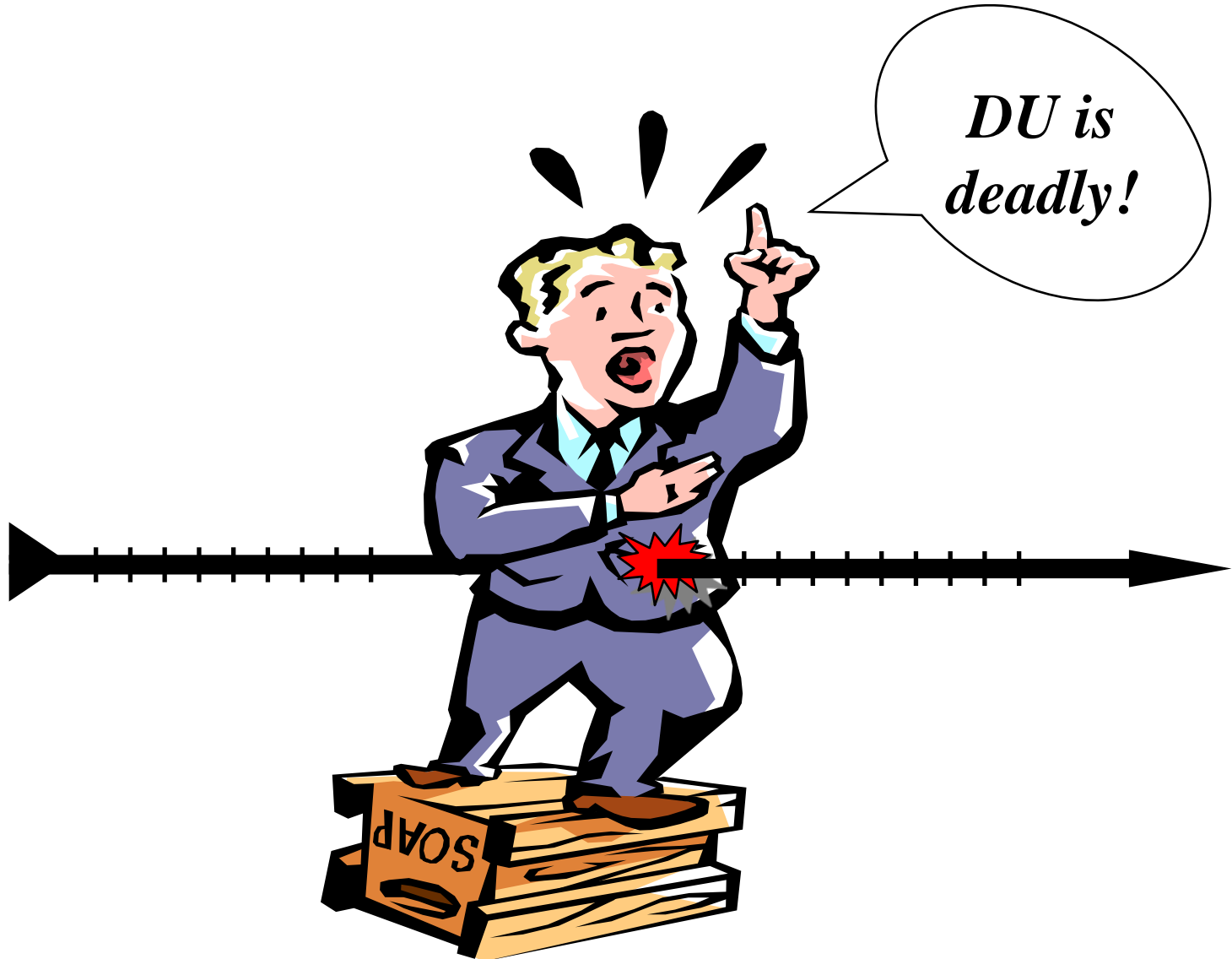
Location	Year	Organization	Dose	Conclusions
Schofield Barracks, Hawai'i	2008	Cabrera	3 mrem/y	These results for non-carcinogenic risks indicate that there are no adverse impacts expected due to chemical exposure to DU.
Iraq	2010	IAEA	0.1 mrem/y	The radiation doses from DU do not pose a radiological hazards to the populations as the four studied locations



# Summary of Environmental Assessments

Location	Year	Organization	Dose	Conclusions
Pohakuloa Training Area, Hawai'i	2010	Cabrera	$4 \times 10^{-4}$ mrem/y	<p>the presence of DU in soil at the PTA results in chemical risk well below the limits that the USEPA considers safe.</p> <p>the presence of DU in PTA soil results in radiological risk well below the limits that the USEPA considers safe.</p>

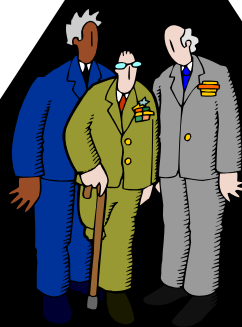
# The Politics of Depleted Uranium



# The National Politics of Depleted Uranium



# The National Politics of Depleted Uranium



# Executive Branch

- Presidential Advisory Committee on Gulf War Illnesses
- Office of the Special Assistant for Gulf War Illnesses



# Depleted Uranium Enters the 2008 Presidential Race

- As President, I will order an end to the United States' illegal use of depleted uranium munitions and will lead an international effort to recover depleted uranium. I will promote environmental remediation. Also, I will develop a program to provide care and restitution for people suffering as a result of the United States' use of depleted uranium munitions, nuclear weapons, nuclear weapons production, nuclear testing, and uranium mining. –

**Congressman Denis Kucinich,  
Democrat, 10<sup>th</sup> District, Ohio**



# Congress

- Various legislation
- 11 Congressional Office Calls





# State Legislatures Considering Laws





# Legal Matters

- Veteran claims against the U.S. Government barred by The Federal Tort Claims Act
- Feres Doctrine
- No successful legal challenges



# Activists – National





VETS HELPING VETS SINCE 1974



## *Military Toxics Project*

**Traprock Peace Center**

**American Gulf War  
Veterans Association**



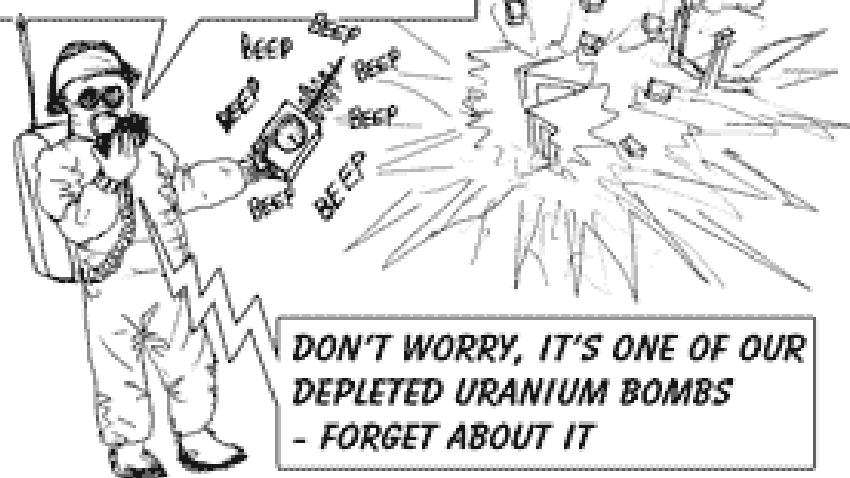


OF CLEAN, SURGICAL WARS AND GULF WAR SYNDROMES

**WARNING: SMOKING THE ENEMY  
MAY BE HAZARDOUS TO YOUR HEALTH.**



**SARGE - THE GEIGER COUNTER'S  
GOING MAD - I THINK WE'VE  
GOT SADDAM'S WMD**

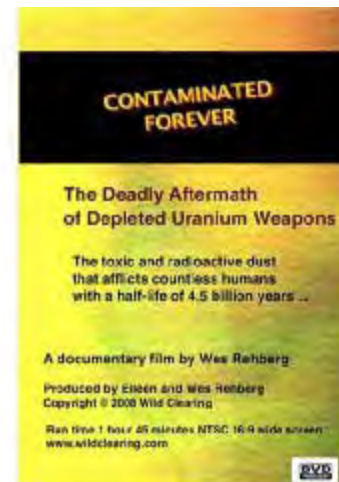
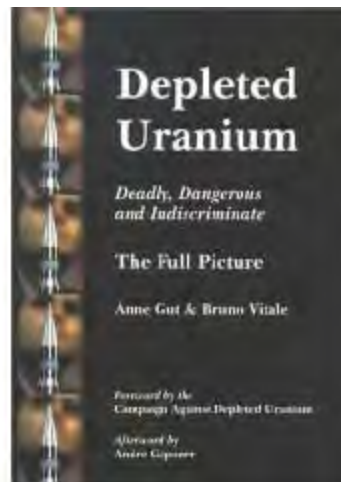
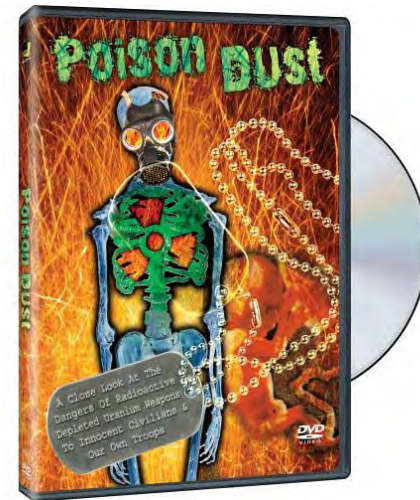
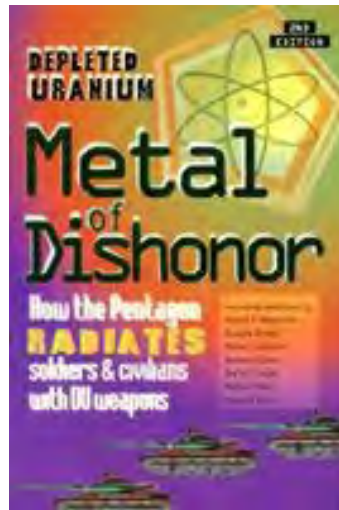








# “Popular Junk Science”





# The International Politics of Depleted Uranium

- **EU Resolution (2008)**
- **A halt to deployment of military and civilian personnel to areas where DU has been used**
- **Member states to provide inventory recording the use of DU**
- **Launch scientific studies into the health impacts of DU where it has been used**
- **Moratorium on the use of DU**
- **Call for an international ban of the military use of depleted uranium**

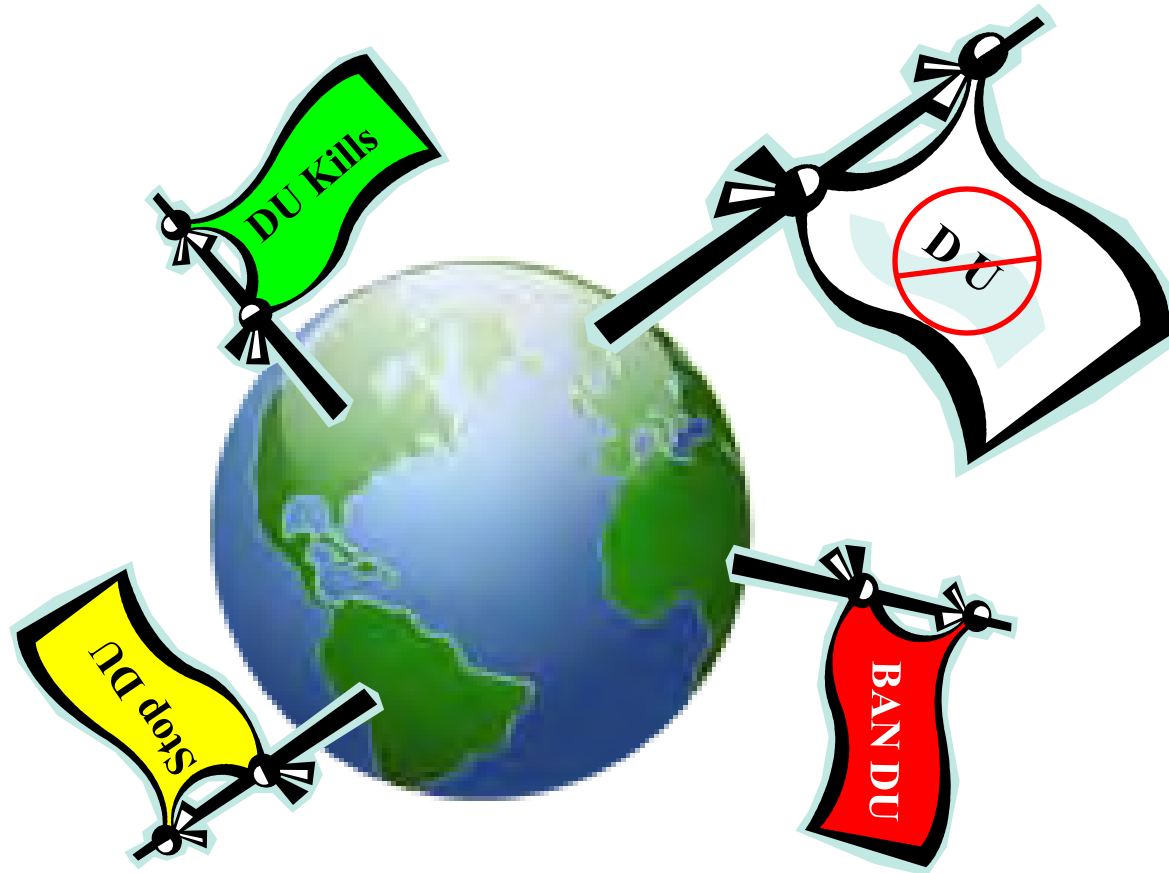


# The International Politics of Depleted Uranium

- UN Subcommision on Prevention of Discrimination and Protection of Minorities – DU a violation of human rights and WMD (1996)
- UN First Committee voted in favor of a resolution highlighting serious health concerns about DU at the UN General Assembly (December 2007)
- UN First Committee voted on 29 October 2010 to require users of DU to report on areas where they have used it



# Activists – International





Campaign Against Depleted Uranium



Uranium Medical Research Centre

*Gutta Lapidem Cavat*

A Drop of Water  
Wears Away the Rock



ICBUW

International Coalition to Ban Uranium Weapons

**GREENPEACE**



IACenter.org

FOUNDED IN 1992 BY RAMSEY CLARK  
INTERNATIONAL ACTION CENTER

Information, activism & resistance to U.S. militarism, war & corporate greed, linking with struggles against racism & oppression within the United States

# Scientist versus Activist



# According to Webster ....

## Science

*“The observation, identification, description, experimental investigation, and theoretical explanation of natural phenomena.”*

## Activism

*“A theory or practice based upon militant action.”*

*Militant – “Combative in service of a cause.”*

# According to Melanson ...

## Scientist

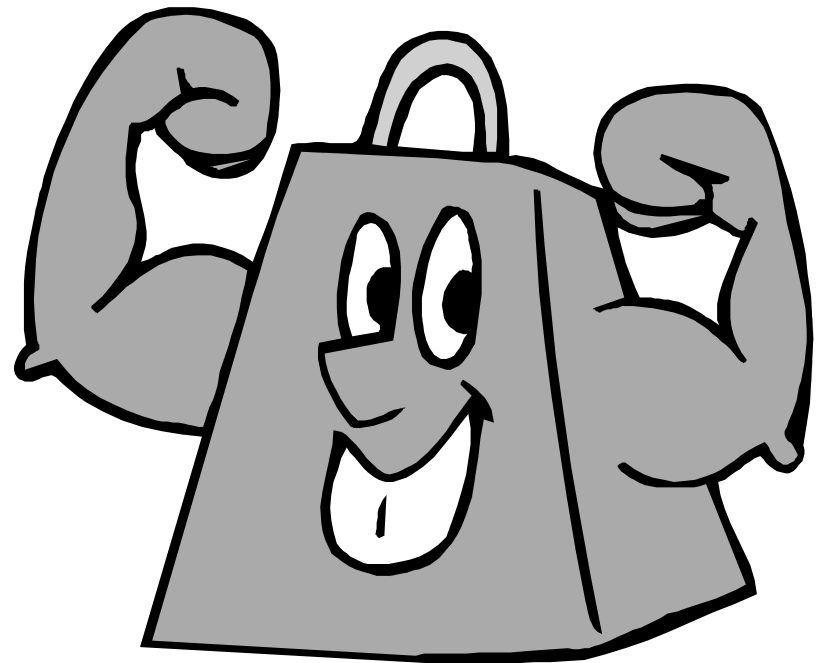
- Starts with a hypothesis
- Begins with what is known
- Considers all data
- Open-minded
- Skeptical
- Willing to consider the possibility that he or she is wrong

## Activist

- Starts with a cause
- Begins with what is unknown
- Selective use of data
- Closed-minded
- Suspicious
- Unwilling to consider the possibility that he or she is wrong

# The Activists' Strengths

- The power of the internet
- Ask the same question to different parts of the Defense Department
- “The Pentagon has lied before ...”
- Cite each other's websites
- Uniqueness: “DU + Anthrax Vaccine + Diet Soda + Flea Collars + Stress = Gulf War Illness
- Demand proving the negative – That DU does not cause these illnesses





# The Activists' Weaknesses

- Half a century of international peer reviewed scientific research on the health effects of uranium (to include depleted uranium)
- The dose makes the poison
- Uranium is a weak carcinogen
- There are safe levels of depleted uranium
- Maximally exposed individuals (in breached tanks) are still below safety limits (excluding fragments)
- Individuals with the highest exposures are not experiencing any of the health effects claimed
- Uranium is ubiquitous - all of us have natural uranium in our bodies

# Some Activist Quotes

- “DU was used in Iraq, Soldiers were in Iraq, Soldiers are sick, DU made the soldiers sick”
- “DU is more dangerous than natural uranium”
- “1 atom of DU will kill you”
- “DU is more dangerous the further you are from the source”
- “Depleted uranium is nuclear waste”
- “U.S. is using natural uranium in weapons to avoid detection”

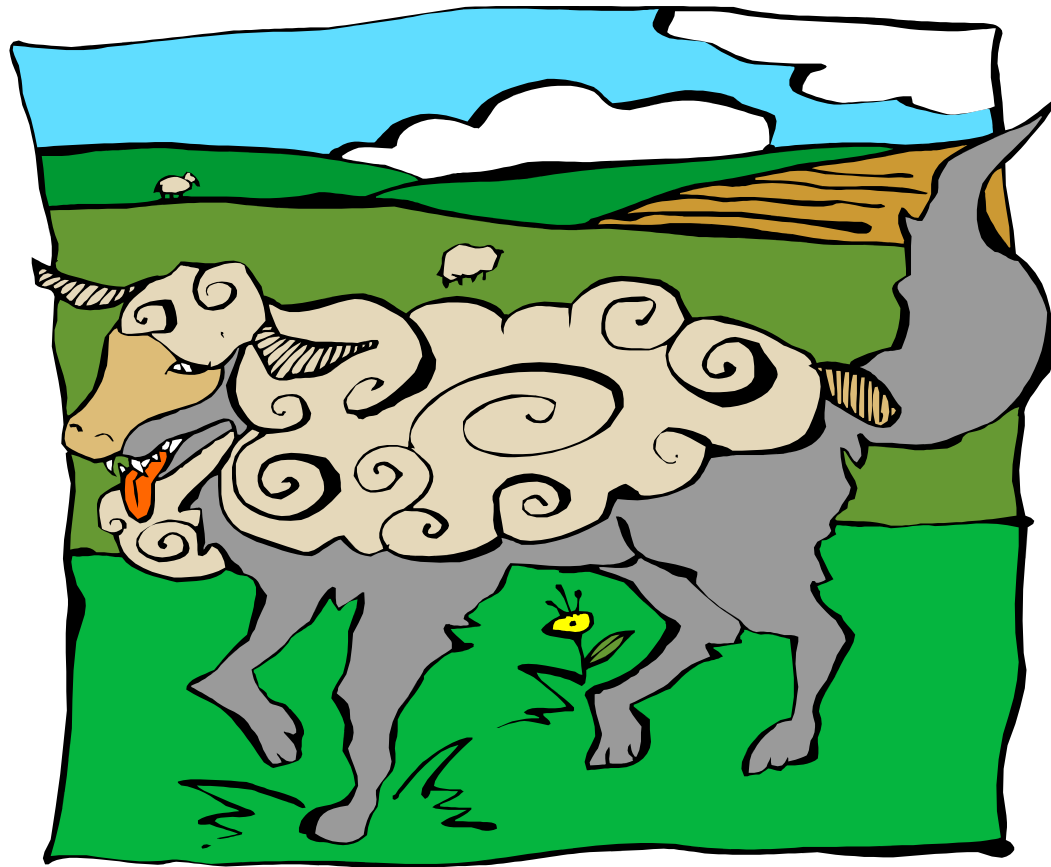
# Some Actual Quotes

- “Depleted Uranium is poisoning our planet”
- “American soldiers are showing signs of depleted uranium poisoning”
- “Depleted Uranium is silently killing tens of thousands of soldiers and millions of civilians in the middle east”
- “Nothing depleted about depleted uranium”

# More Actual Quotes

- “Most of our soldiers returning from these countries will ultimately come down with a fatal case of Depleted Uranium poisoning”
- “Depleted uranium turns to poison gas”

# The Diehard Activist in “Reasonable Skeptic’s” Clothing



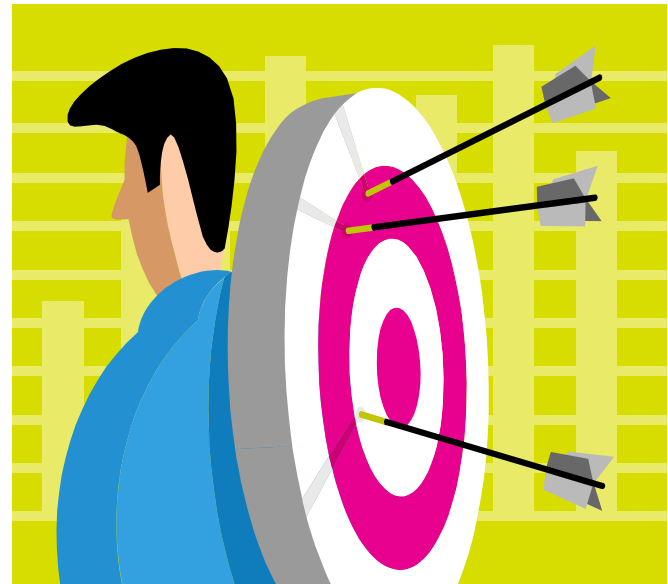
# The Price of Standing up for the Truth

“Dr. Mark Melanson ...

specializes in  
discrediting the DU  
radiation activists”\*

“I was shocked by Dr.  
Mark’s blatant lies”\*

“Tobacco industry hired-  
gun”\*



\* *Haleakala Times* – December 4<sup>th</sup>, 2007

# What I Actually Do ...



# The Press

- Rediscovered the issue periodically
- “Aha ... the cause of Gulf War Illness!”
- Wants “both sides of the issue”
- Sound bites and images rather than science
- “DU poisoning causes nausea, vomiting ...”







# The New York Times

**DAILY NEWS**  
NYDAILYNEWS.COM



honolulu**advertiser**



**AP** Associated Press

Daily Press

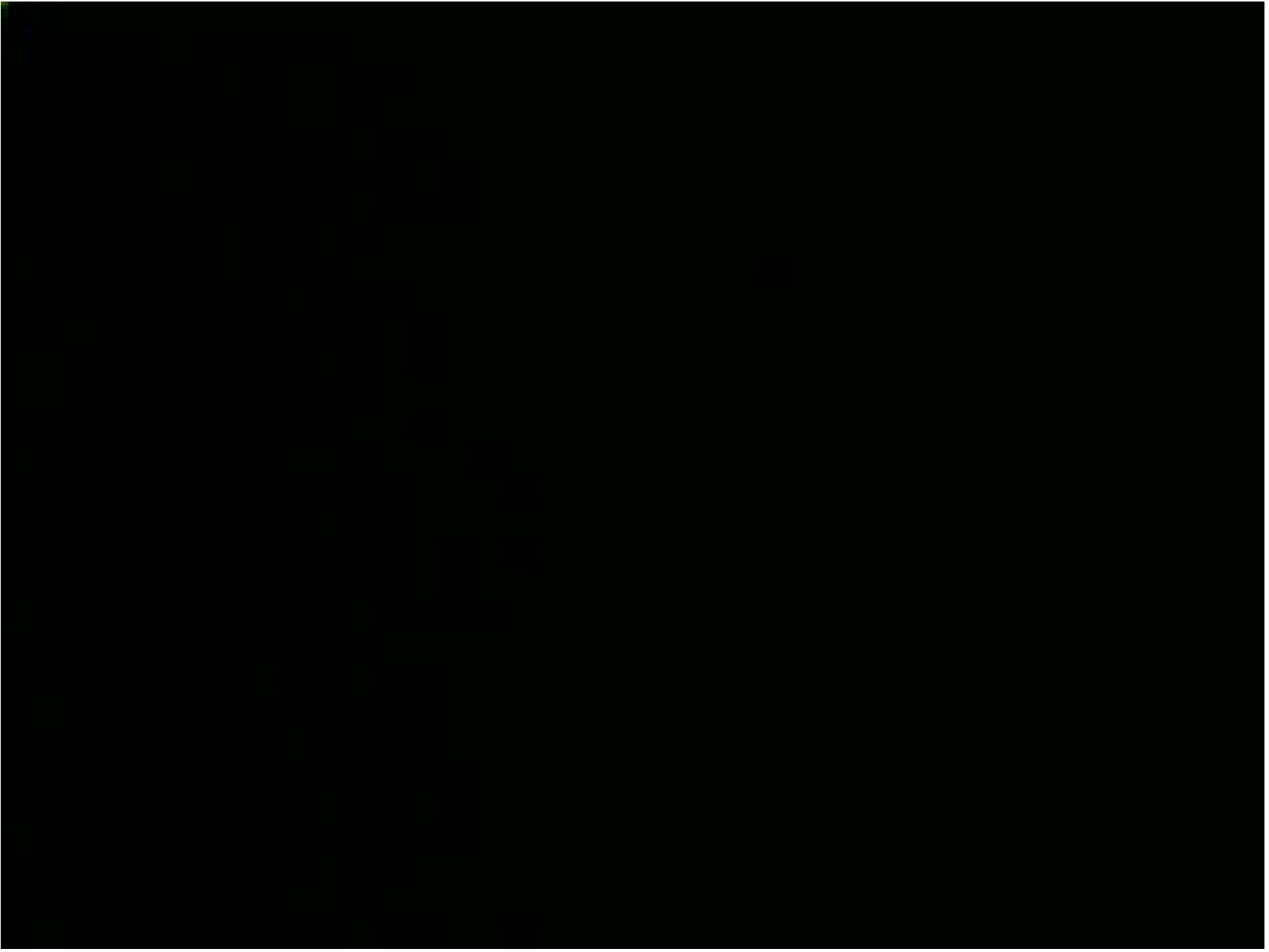
American Forces Press Service

**Hartford Currant**

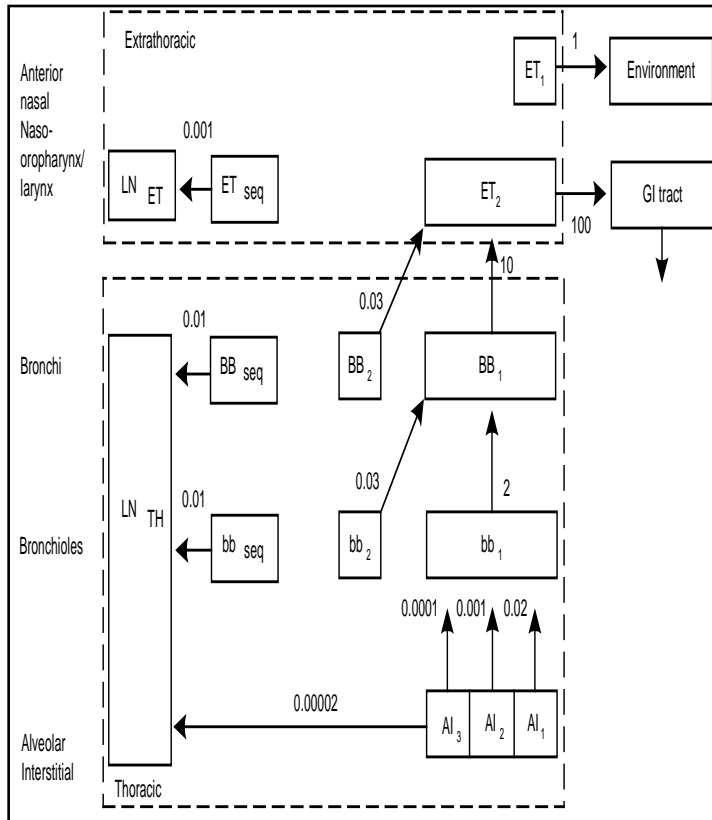


They Always Show Your Best  
Side





# No Competition



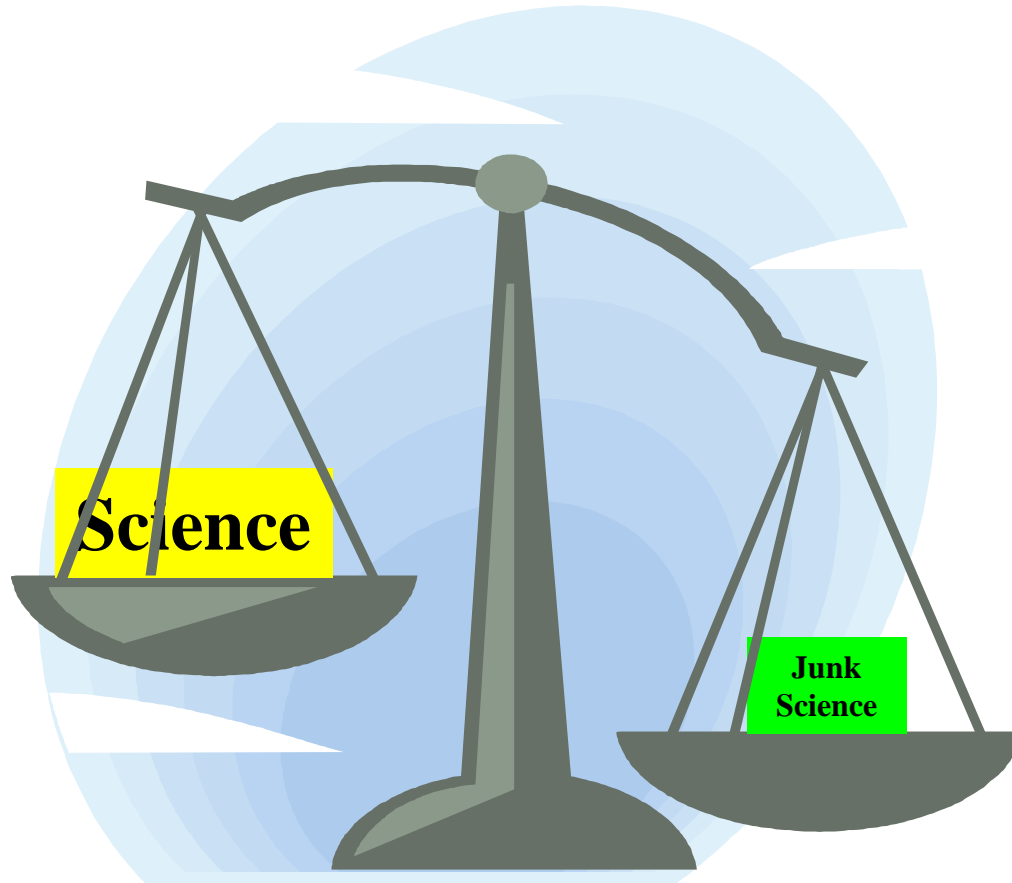
ICRP Lung Model

VS.



Internet Images

# The Sad Reality



# The Big Disconnect

## Science

Depleted uranium has been studied for a half a century and DU's health effects are well understood. It is a mildly radioactive heavy metal for which there are safe levels of exposure.

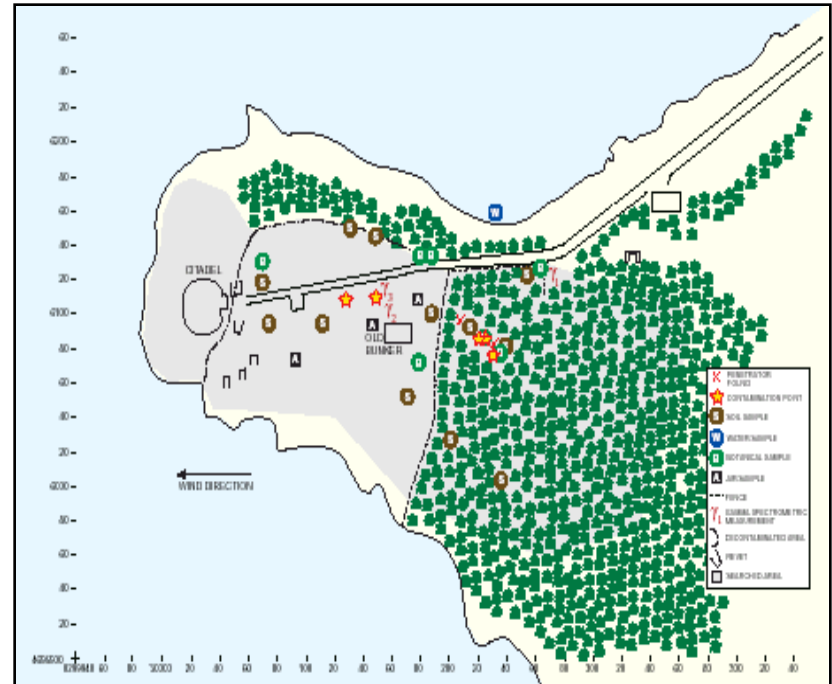
## Politics

Stop using depleted uranium immediately. We do not understand its health effects and more scientific research is required.

# The Absurdity of DU Risk Perception



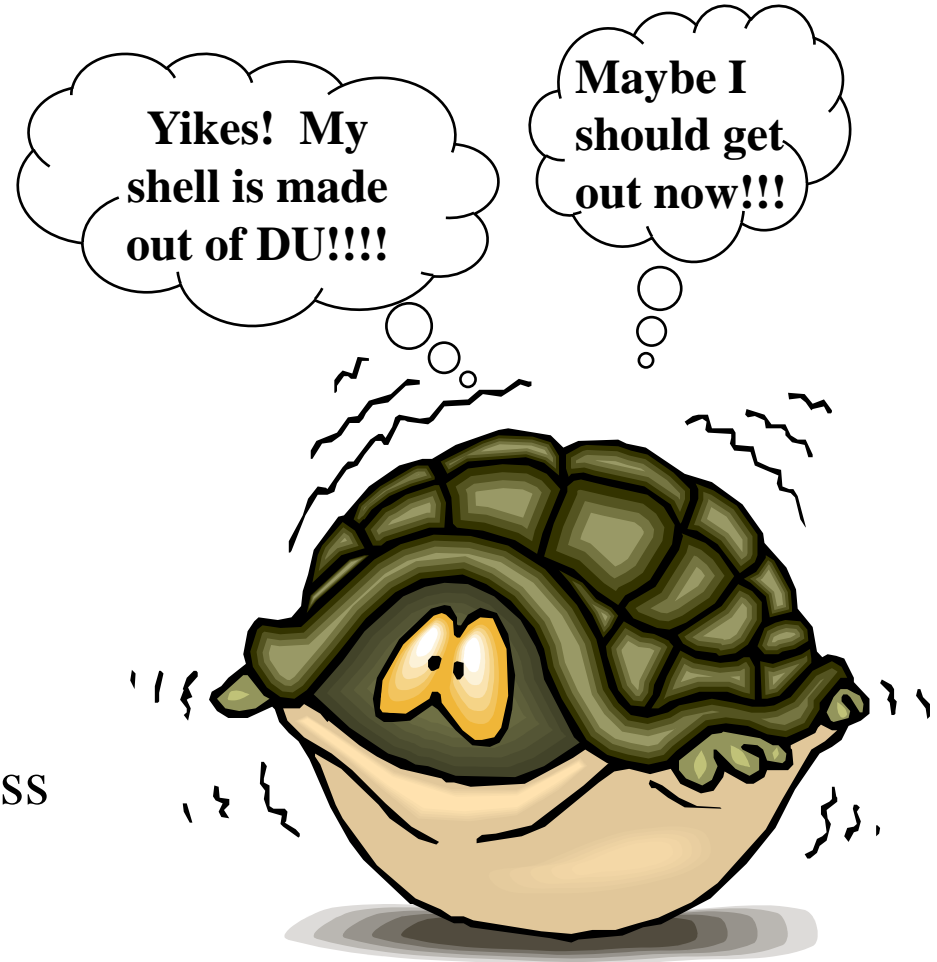
Risk Imbalance



Eco-Devistation

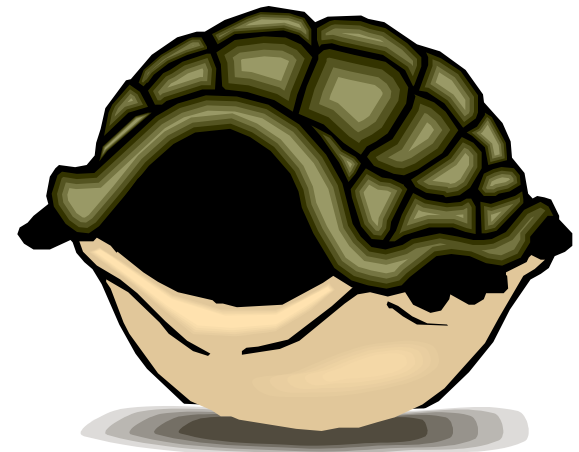
# Other Hidden Consequences

- Failure to identify true causes (if health claims are true)
- Unwarranted fear and anxiety
- Misdirected resources
- Selecting alternative materials that may be less effective and more hazardous





# A Bad Risk Management Decision



# Why is DU so Controversial?

- Radiation
- Gulf War Illnesses
- The military nature of its use
- Propaganda
- The superiority of DU over alternative materials
- Anti-U.S. Sentiment

# For Those of You Who are Conspiracy Theorists

**Question:** “How do you  
defeat the best Military  
in the world?”

**Answer:** “By making its  
soldiers afraid of their  
weapons and distrustful  
of their leaders.”



# Depleted Uranium: A Case Study of Good and Evil

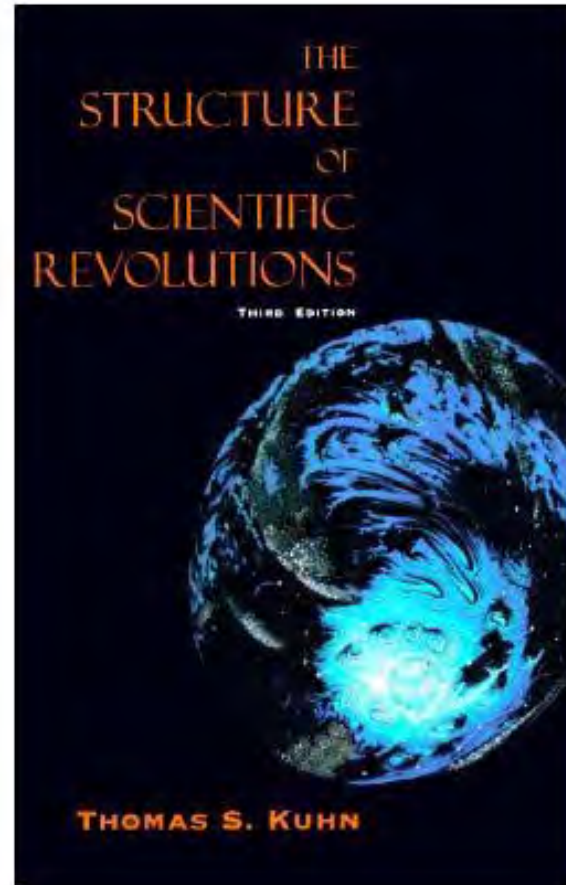
**“There would be no debate over DU if there was no military value derived from its use on the battlefield ... Thus the decision to use DU must be made with a full understanding of the consequences of its use, both negative and positive. If these consequences are not presented in a full and forthright manner, a bad decision will be made that costs lives. Since lives are at stake, using the word *evil* to describe the purposeful distortion of facts in appropriate”**



**Dr. Bernard Rostker**

# My Scientific Philosophy

- The Structure of Scientific Revolutions by Dr. Thomas S. Kuhn
- “Normal Science”
- Scientific Revolutions occur when sufficient evidence challenges Normal Science



# Depleted Uranium is a Safe and Effective Material

- Veterans with embedded fragments
- DU Capstone Study
- Environmental Surveys
- Urine bioassay monitoring of U.S. Troops
- Animal studies to date
- International models are highly conservative



# A Final Caution



# The End (Probably Not)





# Questions?

